

A new species of *Endelus* Deyrolle, 1864 (Coleoptera: Buprestidae) from Sulawesi, Indonesia, with description of *Endelus* (*Hexagonodelus*) subgen. nov.

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Abstract: *Endelus* (*Hexagonodelus*) subgen. nov. is described and reviewed. *Endelus* (*H.*) *caelestis* sp. nov. from Sulawesi, Indonesia, is described and illustrated. Besides the new species, the new subgenus also includes *E. difformis* Deyrolle, 1864, *E. brutus* Deyrolle, 1864, and *E. imperator* Obenberger, 1937, all from Greater Sunda Islands, *E. brutus* also from the Moluccas, *E. violaceipennis* Fisher, 1921, from the Philippines, and *E. coomanianus* Descarpentries, 1948 and *E. coeruleoniger* Descarpentries et Villiers, 1963, both from Vietnam. A key to the species of the subgenus is provided. Lectotypes of *Endelus difformis* Deyrolle, 1864 and *E. imperator* Obenberger, 1937 are designated.

Key words: Sunda Islands, the Philippines, Vietnam, *Endelus* (*Hexagonodelus*) subgen. nov., *Endelus* (*Hexagonodelus*) *caelestis* sp. nov., lectotype designation.

Introduction

The present work continues the author's study of the buprestid genus *Endelus* Deyrolle, 1864 (Kalashian 1995; 1997; 1999a & b; 2007; 2011; 2013; 2017; 2019) and comprises the description of a new species from Sulawesi, Indonesia. The new species belongs to a new subgenus, also described and reviewed in the present paper.

Material and methods

The labels are cited using the following abbreviations: h (handwritten text), p (printed text). Additional comments or interpretations are included in square brackets. The data of individual labels are separated by a slash.

Acronyms of repositories:

BMNH – Natural History Museum (formerly British Museum, Natural History), London, United Kingdom;
MKCY – Collection Mark Kalashian, Yerevan, Armenia;
MNHN – Muséum national d'Histoire naturelle, Paris, France;
NMPC – Národní Muzeum, Prague, Czech Republic;
USNM – National Museum of Natural History, Washington, U.S.A.

Results

Subgenus *Hexagonodelus* subgen. nov.

Type species: *Endelus difformis* Deyrolle, 1864 by present designation.

Derivatio nominis: The subgeneric name is formed from the Latin “hexagon” referring to the peculiar body shape of the species included, and “-delus” – the terminal part of the generic name “*Endelus*”.

Description: Body rather robust, 1.9–2.1 time as long as wide, with somewhat hexagonal general shape, widened from head to humeral tubercles, then subparallel approximately to posterior 2/5 of elytra and narrowed towards elytral apices. Surface rather shiny, without or with very fine microreticulation. Head large, moderately transverse, only slightly wider than long, slightly narrowed anteriorly. Frontoververtex deeply concave, oculo-frontal margins subangulate, eyes large, convex, clearly visible in dorsal aspect, pointed laterally. Temples clearly visible in dorsal aspect, moderately divergent backwards, approximately half the length of eyes. Pronotum distinctly narrower than elytra, widest approximately near posterior 1/3, where sides are angular, strongly convergent forwards and very delicately sinuate or



nearly straight backwards to obtuse basal angles. Pronotum rather narrowly unevenly flattened along sides and medially of posterior angles, disc convex, with one or two slightly pronounced transverse gibbosities. Scutellar shield rather large, triangular. Elytra with sides subparallel in approximately anterior 3/5, then abruptly convergent to apices. Apices viewed together almost irregularly rounded. Elytra with distinct humeral tubercles, behind them rather widely flattened along sides to apical 2/5 of elytra, elytral disc uneven with more or less deep depressions and distinct elevations.

Differential diagnosis: The most characteristic feature of the new subgenus is general body shape which never occurs in other *Endelus* species. Besides, in all other *Endelus* the head is much wider, distinctly wider than long. In the deeply concave frontovertex and uneven elytral surface, the new subgenus shows some resemblance to subgenera *Kubaniellus* Kalashian, 1997 and *Papuadelus* Kalashian, 2017, and species-group *E. (s. str.) bakeri* Kerremans, 1914 (Kalashian, 2017) but differs from them by structure of pronotum – in *Kubaniellus* pronotum medially with a pair of large and deep transversely oval, rounded or irregular foveae, in representatives of *E. (s. str.) bakeri* group the pronotal disc has distinct transverse elevations and in *Papuadelus* there is only one distinct elevation. Besides, in *Papuadelus* the eyes are pointed to the front, temples much longer than eyes, angularly projecting behind them; punctuation of head much rougher than in the new subgenus; in the species of the *E. (s. str.) bakeri* group, head is distinctly widened anteriorly.

The new subgenus includes the following species: *Endelus difformis* Deyrolle, 1864, *E. brutus* Deyrolle, 1864, *E. imperator* Obenberger 1937, *E. caelestis* sp. nov., all from Greater Sunda Islands (*E. brutus* also from Makian, Moluccas), *E. violaceipennis* Fisher 1921, from the Philippines, *E. coeruleoniger* Descarpentries & Villiers 1963 and *E. coomanianus* Descarpentries 1948, both from Vietnam.

Though both genera of the subtribe Aphanisticina (*Aphanisticus* Latreille, 1810 and *Endelus*) are presented on both sides of Wallace' line (Bellamy, 2008), as far as it is known there are only few groups below the generic level crossing the line (e.g., *Aphanisticus chloris* Obenberger, 1928 species-group, *A. endeloides* Carter, 1924 species-group, *E. marseuli* Deyrolle, 1864 species-group – Kalashian, 2011, Kalashian, Kubáň, 2014), and *Hexagonodelus* subgen. nov. is another group distributed in the same manner.

***Endelus (Hexagonodelus) caelestis* sp. nov.** (Fig. 7)

Holotype ♀ BMNH, INDONESIA: Sulawesi, Utara, Dumoga-Bone N.P. [Bogani Nani Wartabone National Park], March 1985 [p] / Lowland forest, ca 200 m [p] / Malaise trap [p] / R. Ent. Soc. Lond. Project Wallace, B.M. 1985-10 [p].

Derivatio nominis: From the Latin “caelestis” – “celestial” to emphasise the bright blue coloration of a new species.

Description: Body rather wide, approximately twice as long as wide, of hexagonal shape as described above, dorsal surface bright blue, without microreticulation, shiny; ventral surface black with very fine bronzy lustre. Body length 5.85 mm, width – 2.9 mm. Head large, narrower than anterior margin of pronotum. Clypeus turned back, situated nearly horizontally, transversally triangular, shallowly arcuately concave distally. Frons barely widened posteriorly, frontovertex deeply nearly regularly arcuately concave, concavity posteriorly not reaching anterior margin of pronotum. Frons posteriorly of clypeus shortly keel-shaped, behind this keel with deep, transverse, arcuate split, between antennal cavities and inner margin of eyes with well-developed longitudinal keels visible in frontal aspect as distinct tubercles. Oculofrontal margins subangulate, eyes large and convex, protruded from head outline, clearly visible in dorsal aspect, in lateral aspect unevenly reniform with large upper portion and small and narrow lower one. Temples about half as long as eyes, slightly diverging backward. Frons with rather sparse large flat round punctures, toward vertex and laterally with rather small and sparse simple punctures. Antennomeres 1 and 2 large, longitudinal, slightly enlarged distally, antennomeres 3–4 small, longitudinal, subcylindrical, very barely enlarged distally, antennomere 5 slightly longitudinal, finely enlarged distally, antennomeres 6–11 serrate, antennomere 6 slightly longitudinal, following antennomeres strongly transverse. Pronotum distinctly narrower than elytra, 1.95 times as wide as long, widest approximately near posterior 1/3 where sides angular, strongly convergent nearly straight forwards and very finely sinuate backwards to obtuse basal angles. Lateral margins very indistinctly irregularly serrate, bordered with fine edging shortly continued along posterior margin of pronotum. Anterior margin of pronotum moderately bisinuate with protruded medial portion, bordered with entire narrow edging, posterior margin strongly bisinuate with wide trapezoidal medial lobe. Pronotum rather widely irregularly depressed along



sides and posterior margin, medially of posterior angles depressions enlarged forwards, disk convex, with shallow transverse depressions at the level of approximately anterior 1/4 and posterior 1/3 separating two fine transverse elevations. Surface in posterior portion (about up to the level of posterior 1/3 of pronotum) with irregular rather dense, large, flat punctures, anteriorly with small, sparse and irregular simple punctures. Scutellum large, slightly transversally triangular, nearly glabrous. Elytra approximately 1.45 times as long as wide, their sides slightly diverging near humeral tubercles where elytra are widest, then very slightly and barely sinuously converging to approximately posterior 2/5, then nearly straight and very apically delicately sinuously narrowed to apices. Apices together almost irregularly rounded. Sides of elytra finely irregularly serrate, bordered with distinct thin edging in anterior 3/4, elytral apices with several fine teeth. Elytra with very uneven structure, laterally rather widely flattened along anterior 3/5, each elytron with distinct humeral tubercle continued backwards with slightly pronounced oblique elevation reaching posterior 1/4 of elytra and with rather small tubercle laterally at the level of approximately posterior 1/3 of elytra, with slightly pronounced elevation behind scutellum and convex apical portion, with rather deep irregular depressions medially of humeral tubercle and near suture at anterior 1/3 and posterior 2/5-1/6 of elytra. Elytral surface with rather dense irregular small punctures with hyphen-like bottom very slightly smoothed backwards, anteriorly surface with few very fine and short irregular transverse wrinkles. Prosternal process with rather dense and rough somewhat rasp-shaped punctures, metasternum medially before transverse sulcus with small and superficial sparse punctures, behind sulcus with denser and larger more distinct punctures, laterally with superficial arcuate wrinkles forming net of cells, abdominal sternites with punctures medially and wrinkles laterally as well, this structure smoothed backwards. Anal ventrite in female slightly arcuately notched distally.

Sexual dimorphism: Male unknown.

Differential diagnosis: See key below.

Distribution: Indonesia, North Sulawesi.

***Endelus (Hexagonodelus) difformis* Deyrolle, 1864 (Fig. 2)**

Deyrolle (1864: 236, pl. III, fig. 9); Théry (1932: 12).

Lectotype sex unknown, here designated, MNHN: difformis H. Deyr., Borneo [h, bottom label] / TYPE [p,

red paper] / SYNTYPE [p, red paper] / SYNTYPE, *Endelus difformis* Deyrolle, 1865 [p] / MNHN, EC 10581 [p] / TRANSCRIPTIO M. KALASHIAN, 2019: difformis H. Deyr., Borneo [p] / Lectotypus, *Endelus difformis* Deyrolle, 1864, M. Kalashian design., 2019 [p, red paper].

Total body length 4.66 mm, maximum width 2.25 mm.

Distribution: Borneo (unstated whether Indonesia or Malaysia).

Notes: Described from an unstated number of specimens from “Borneo” (without indication of exact locality). A specimen deposited at the MNHN has been selected as lectotype and the designation is made to maintain nomenclatural stability.

***Endelus (Hexagonodelus) brutus* Deyrolle, 1864 (Fig. 1)**

Deyrolle (1864: 236); Théry (1932: 11).

Holotype, sex unknown, MNHN: brutus H. Deyr., Makian [h, bottom label] / TYPE [p, red paper] / HOLOTYPE [p, red paper] / Museum Paris, 1952, Coll. R. Oberthür [p] / HOLOTYPE, *Endelus brutus* Deyrolle, 1865 [p] / MNHN, EC 10582 [p] / TRANSCRIPTIO M. KALASHIAN, 2019: brutus H. Deyr., Makian [p] / Holotypus, *Endelus brutus* Deyrolle, 1864, M. Kalashian design., 2019 [p, red paper].

Additional material: 1♀ NMPC: Celebes [Sulawesi, Indonesia], Dr. Kühr.

Distribution: Indonesia: Makian Island (North Moluccas), Sulawesi (Théry 1932; Bellamy 2008).

Notes: Described from Makian from an unstated number of specimens, but there is a feature mentioned by H. Deyrolle (absence of head) which is evidence that he had only one specimen at his disposal; thus, the headless specimen in MNHN can be considered as a holotype according to Article 73.1.2. of International Code of Zoological Nomenclature (ICZN 1999). Besides the type one specimen originated from Sulawesi is mentioned by Théry (1932) [labelled “Pangie, Célèbes (C. Ribbe, 1882)”. I have had the possibility to study another single specimen also from Sulawesi.

***Endelus (Hexagonodelus) violaceipennis* Fisher, 1921 (Fig. 6)**

Fisher (1921: 443).

Holotype, sex unknown, USNM: [The Philippines] Davao, Mindanao, Baker/ Type No [p] 51522 [h] U.S.N.M [p] / *Endelus violaceipennis* Fisher [h, pencil, not the original museum label] / Holotypus *Endelus violaceipennis* Fisher 1921 M. Kalashian design. 2019 [p, red paper].



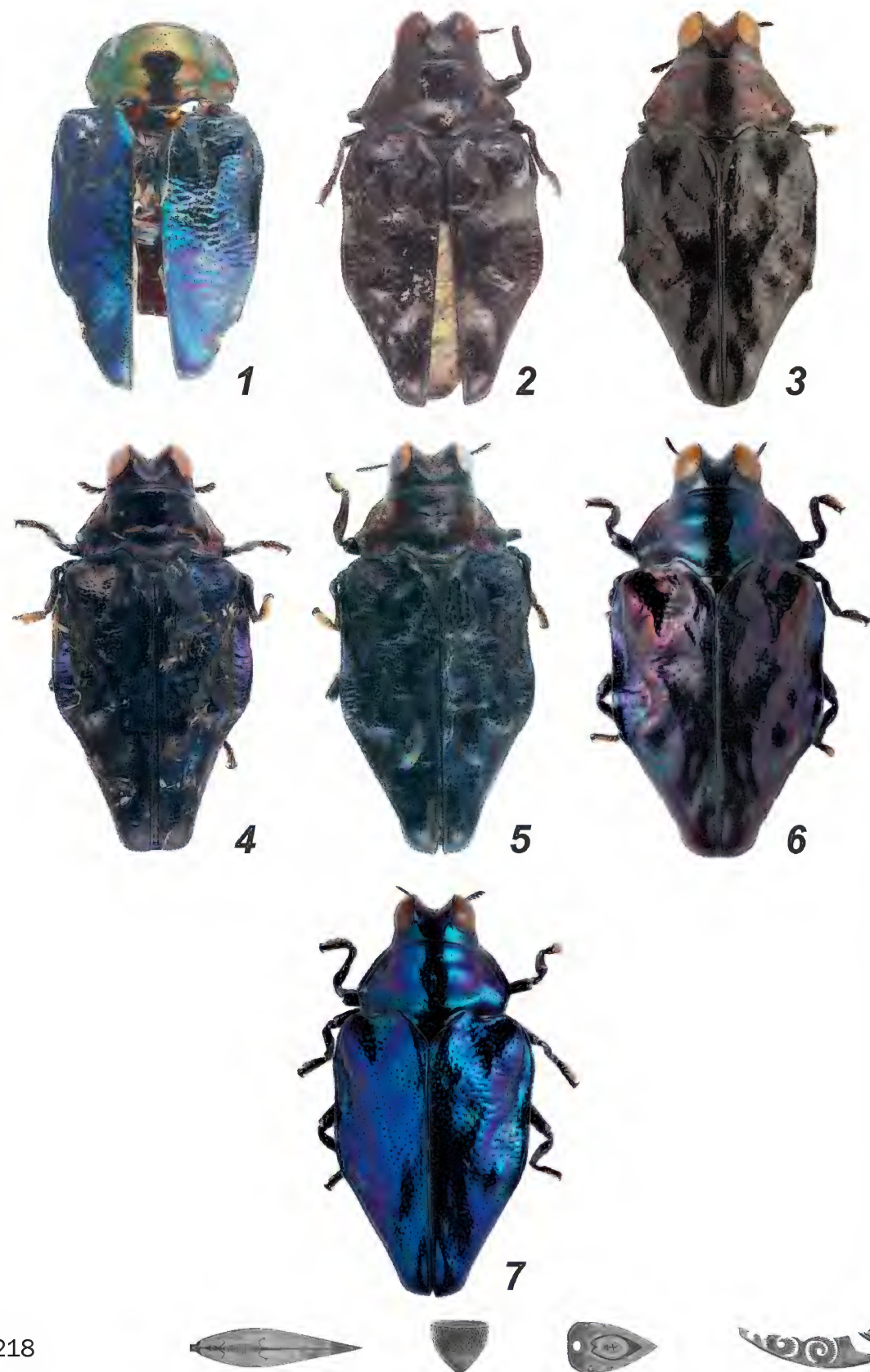
Distribution: The Philippines: Mindanao.
Note: Described from “Davao, Mindanao (Baker)”.
So far known only from the holotype.

***Endelus (Hexagonodelus) imperator* Obenberger, 1937** (Fig. 3)
Obenberger (1937: 21).

Lectotype ♂, here designated, NMPC: [Indonesia]
Pandan Aroe M, res. Kediri, E. Java [h] / Typus [p, red

paper] / *Endelus imperator* m. Type [h] det. Dr. Obenberger [p] / Lectotypus, *Endelus imperator* Obenberger, 1937, M. Kalashian design., 2019 [p, red paper].

Distribution: Indonesia: Java.
Note: Described from an unknown number of specimens from “Java or.: Kediri”. I designate as the lectotype the male specimen deposited at the NMPC. A lectotype is designated in order to maintain nomenclatural stability.



Figures 1–7. *Endelus* (*Hexagonodelus* subgen. nov.) spp., dorsal view. 1 – *E. (H.) brutus* Deyrolle, 1864, holotype (MNHN); 2 – *E. (H.) difformis* Deyrolle, 1864, lectotype (MNHN); 3 – *E. (H.) imperator* Obenberger 1937, lectotype (NMPC); 4 – *E. (H.) coeruleoniger* Descarpentries et Villiers, 1963, holotype (MNHN); 5 – *E. (H.) coomanianus* Descarpentries, 1948, holotype (MNHN); 6 – *E. (H.) violaceipennis* Fisher, 1921, holotype (USNM); 7 – *E. (H.) caelestis* sp. nov., holotype (BMNH) [not to scale] (images 1–2 and 4–5 courtesy Christophe Rivier, MNHN).

***Endelus* (*Hexagonodelus*) *coomanianus* Descarpentries, 1948** (Fig. 5)

Descarpentries (1948: 96); Descarpentries & Villiers (1963: 159–160).

Holotype ♀ MNHN: [North Vietnam] TONKIN, Hoa-Binh, leg. A de Cooman [p] / *Endelus coomanianus* mihi [h] TYPE [p, red] unique [h], A. Descarpentries det. [p] / TYPE [p, red paper] / HOLOTYPE [p, red paper] / MNHN, EC 10598 [p].

Distribution: Vietnam.

Note: Described from one female from “Tonkin, environs de Hoa-Binh (R. P. de Cooman)”. So far known only from the holotype.

***Endelus* (*Hexagonodelus*) *coeruleoniger* Descarpentries et Villiers, 1963** (Fig. 4)

Descarpentries & Villiers (1963: 159–160).

Holotype ♀ MNHN: [North Vietnam] Tonkin, Hoa-Binh, Coll. J. Clermont [p] / TYPE [p, red paper] / HOLOTYPE [p, red paper] / *Endelus coeruleoniger* n. sp. nob. Holotype, ♀, A. Descarpentries et [h] A. Villiers det. [p] 1963 [h] / MNHN, EC 10599 [p].

Additional material: 2♂ & 1♀ MKCY: VIETNAM bor. Quang Ninh prov., 10 km SE Tien Yen, 1.-14.4.2004, H. Mühle leg.

Distribution: North Vietnam.

Notes: Described from one female from “Tonkin: Hoa-Binh (R. P. de Cooman)” [sic!], does not corresponds to the original labels]. After the description, a series of this species including about 40 specimens was collected in North Vietnam by Hans Mühle. Beetles were collected on the fern plants on the shore of a swamp near forest. Thanks to Mühle’s kindness I have had the possibility to study some specimens from this series. According to his personal communication, the specimens discussed will be deposited in several European Museums including BMNH, MNHN, NMPC, Naturhistorisches Museum in Basel, Switzerland, and in Zoologische Staatssammlung in Munich, Germany.

A key to species of *Endelus* (*Hexagonodelus*) subgen. nov.

1 Body above distinctly bicolorous with pronotum golden with greenish reflection and elytra bright blue. Elytral surface less uneven, with elevations and depressions less pronounced. Body 4.42–5.25 mm. Indonesia: Makian; Sulawesi *E. brutus* Deyrolle, 1864 (Fig. 1) – Body above unicolorous or slightly bicolorous. Elytral surface strongly uneven, with well pronounced elevations

and depressions 2
2 Body above bright blue; 5.85 mm. Indonesia: Sulawesi *E. caelestis* sp. nov. (Fig. 7)
– Body above dark violet with purplish reflection, or dark bronzy with reddish–cupreous reflection or black with violet reflection 3
3 Body rather robust, 1.90 as long as wide, dorsally slightly bicolorous, dark violet with purplish reflection distinctly more pronounced on elytra than on pronotum. Body 5.25 mm. The Philippines: Mindanao
..... *E. violaceipennis* Fisher 1921 (Fig. 6)
– Body comparatively slender, 2.0–2.1 times as long as wide, nearly unicolorous sometimes with less pronounced difference of tint between elytra and pronotum 4
4 Dark bronzy with fine reddish–cupreous reflection, sometimes more pronounced on pronotum than on elytra. Species from Greater Sunda Islands 5
– At least elytra black with violet reflection. Species from Vietnam 6
5 Reddish–cupreous reflection on pronotum distinctly more pronounced than on elytra. Pronotum with more distinct and dense big flattened punctures, with slightly pronounced transversal elevation near approximately anterior portion of pronotum. Body 4.8 mm. Indonesia: Java *E. imperator* Obenberger 1937 (Fig. 3)
– Body above nearly unicolorous. Punctuation of pronotum less distinct than in previous species, smooth, transverse elevation situated approximately near middle portion of pronotum. Body 4.75 mm. Borneo
..... *E. difformis* Deyrolle, 1864 (Fig. 2)
6 Sides of pronotum behind anterior angles slightly arcuate, then distinctly sinuate before angularity at the widest portion of pronotum. Pronotum with fine but distinct transverse elevation near anterior 1/3. Elytral sides behind posterior 2/5 nearly straight, slightly sinuate just before apex. Body 5.75 mm
..... *E. coomanianus* Descarpentries 1948 (Fig. 5)
– Sides of pronotum nearly straight, very finely arcuate behind anterior angles, then very slightly sinuate before angularity at the widest portion of pronotum. Pronotum near anterior 1/3 convex but without separated elevation. Elytral sides behind posterior 2/5 distinctly sinuate, then nearly straight towards apex. Body 4.6–5.3 mm *E. coeruleoniger* Descarpentries & Villiers 1963 (Fig. 4)

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